

SUMMARY OF NRC'S SAFETY CULTURE ACTIVITIES

Safety Culture Enhancements for the Reactor Oversight Process

One of the lessons learned following the discovery of the reactor pressure vessel head degradation at the Davis-Besse Nuclear Power Station was that a weak safety culture was a contributing cause that led to the degradation. On July 1, 2004, the staff of the U.S. Nuclear Regulatory Commission (NRC) provided the Commission options for enhancing its oversight of safety culture in SECY-04-0111, "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture." In the August 30, 2004, Staff Requirements Memorandum (SRM)-SECY-04-0111, the Commission directed the staff, in part, to enhance the reactor oversight process (ROP) guidance related to cross-cutting issues to more fully address safety culture, continue to monitor industry efforts to assess safety culture, and develop inspection guidance for evaluating a licensee's safety culture for licensees with significant performance issues. In SRM-SECY-05-0187, "Status of Safety Culture Initiatives and Schedule for Near-Term Deliverables," dated December 21, 2005, the Commission directed the staff, in part, to continue to interact with stakeholders, build from enhancements already made to the ROP, and ensure that the resulting ROP modifications are consistent with the regulatory principles that guided the development of the ROP such that overall assessments of licensee performance remain transparent, understandable, objective, predictable, risk informed, and performance based.

The staff held public meetings with external stakeholders and modified selected inspection manual chapters and procedures to more fully address safety culture. The NRC staff enhanced the ROP by incorporating 13 safety culture components and the enhanced ROP was implemented in 2006. The enhanced ROP integrated safety culture into substantive cross-cutting issues (SCCI) by assigning cross-cutting aspects (associated with 9 of the 13 safety culture components) to inspection findings (including security-related findings) if applicable. The ROP supplemental inspection program considers all 13 safety culture components. Based on a licensee's performance issues, the NRC staff has a graded response in accordance with supplemental inspection guidance.

In 2007-2008, the staff reviewed the implementation of the enhanced ROP. As a result of this review and lessons learned, the staff developed additional clarifications and modifications to the ROP inspection procedures and manual chapters in 2009. The staff continues to assess the ROP safety culture enhancements to determine that they meet the ROP regulatory principles of being transparent, understandable, objective, predictable, risk informed, and performance based.

Fuel Cycle Safety Culture Pilot (2007 and 2008)

The staff made considerable progress in evaluating how to incorporate safety culture into its oversight processes through the Office of Nuclear Material Safety and Safeguards (NMSS) Safety Culture Pilot which was implemented in 2007. The NMSS Pilot was conducted by an interoffice Safety Culture Task Group led by NMSS and included staff from various offices and Region II with knowledge and experience in the areas of safety culture, inspection, and rulemaking. The task group reviewed the ROP safety culture components for their applicability to the fuel cycle environment. Based on site visits to two fuel cycle facilities which included interviews at those sites and a review of the NMSS inspection procedures as well as other NMSS oversight programs and processes, the staff concluded that the 13 safety culture components could apply to the fuel cycle

environment. However, the staff would need to modify some descriptions to address the unique characteristics of that environment.

The staff developed five options regarding the pilot implementation strategy for the fuel cycle oversight program, and the options ranged from no action to rulemaking. For stakeholder feedback, the staff presented the options at a Fuel Cycle Information Exchange meeting in June 2008. The staff believes that the appropriate approach is to explicitly apply safety culture components consistently throughout the fuel cycle inspection and assessment program. However, this effort will now be integrated into another initiative – the revised fuel facility oversight process. The intent of this process is to draw on risk insights to develop a more stable, predictable, and transparent oversight process building on the principles of the ROP. The staff formed a steering committee, and its charter is expected to be finalized in the third quarter of 2009. There are limited resources for the Fiscal Year (FY) 2010 budget, and resources are being planned for the FY 2011 budget.

This activity will consider how it will incorporate the safety culture characteristics in the final safety culture policy statement into the revised fuel facility oversight process. In addition, decisions on applying the insights from the pilot to other types of licensees regulated by NMSS will be made when the fuel facility oversight process initiative is accomplished to take advantage of knowledge gained from that initiative.

Safety Culture Considerations for New Reactor Construction

The staff from the Office of New Reactors (NRO) has actively participated on the existing safety culture inter-office teams (and task groups) to provide input to the existing ROP safety culture approach. Participation in these meetings helped inform NRO staff in its development of the process for considering areas important to safety culture for the new reactor construction inspection program. The staff assembled an inter-office task group to review the existing ROP safety culture components (as outlined in Regulatory Issue Summary 2006-13, “Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture”) and to develop an approach for use in new reactor construction. In addition, a contractor reviewed the safety culture components independently from the NRC staff. The results of the task group and the independent contractor concluded that construction events could be identified for each of the existing components, and as a result, the existing components could be considered in the oversight process being developed by NRO. The staff and the new reactor construction stakeholders recognize that a strong safety culture during new reactor construction is paramount for ensuring that the newly constructed plant is in compliance with its design and capable of operating safely following construction. As a result, the staff is continuing to evaluate the appropriate level of monitoring of safety culture as a potential input to the Construction Response Table or equivalent program assessment tool. The staff intends to continue seeking stakeholder input on the development of its oversight program for new reactor construction including the areas important to safety culture during the regularly scheduled public meetings.

Activities Related to Nuclear Security/Safety Culture

After licensees implemented security requirements at nuclear power plants following the events of September 11, 2001, the NRC observed significant improvements in the security of these facilities through baseline and special inspections (e.g., material control and accounting, Section B.5.b Temporary Instructions) and NRC-evaluated force-on-force exercises. Because of concerns involving the control of sensitive security-related information, the Commission directed that the security cornerstone would have a separate but parallel ROP process. The

NRC has identified a number of issues through both allegations and inspections that relate to the cross-cutting areas of the ROP. These include human performance issues (i.e., inattentiveness both at an over-watch post for a vehicle barrier system and in the search train), problem identification and resolution issues (i.e., ineffective corrective actions for identified inoperable vital area doors over an extended period), and safety conscious work environment issues (i.e., security officers feeling discouraged from reporting safety concerns including behavioral observation program elements). The security cornerstone of the ROP is an evaluation of a licensee's implementation of its security program. Included within this assessment process is the treatment of security performance issues as they may relate to the cross-cutting areas (i.e., human performance, problem identification and resolution, and safety conscious work environment) within the NRC's safety culture framework. These security performance issues that are identified as having cross-cutting aspects are assessed in an integrated fashion across the seven cornerstones of safety.

In late 2006, the NRC senior management identified an action item related to the security inspection process and human performance issues that involved the need to identify ways for resident inspectors to be more sensitive to security issues and more involved in security inspections at sites. This need was addressed by a report of an Ad Hoc Review Group that was issued in May 2007. The conclusions and recommendations of this report gained added importance when the NRC became aware of evidence of inattentive security officers at the Peach Bottom Atomic Power Station in September 2007 (Agencywide Documents Access and Management Systems Accession No. ML080420566). To address the inattentiveness concerns, the staff, in September 2007, ensured that onsite NRC staff increased random inspections at security posts at all nuclear power plants (i.e., during weekends and backshifts). To better inform NSIR of actions it might take to determine how security-related performance issues could be addressed in the framework of safety culture, security representation is now on the Safety Culture Working Group. On July 21, 2008, the NRC issued interim guidance for regional offices to use in the Resident Inspection Program to enhance resident inspector sensitivity and involvement in the routine oversight of security at power reactors. Resident inspectors will receive permanent guidance that will address implementation of the policy statement's safety culture expectations.

With regard to security officer inattentiveness, the staff issued a Security Advisory SA-07-06, "Security Officers Inattentive to Duty," to emphasize that licensees of power reactors, Category I and III fuel cycle facilities, independent spent fuel storage installations and conversion facilities, and certificate holders of gaseous diffusion plants should have effective processes and procedures in place to ensure that individuals performing specific security duties are attentive to those duties. To address the broader industry concerns related to inattentive security officers, the NRC issued to licensees of power reactors and Category I fuel cycle facilities an industry-wide Bulletin, "Security Officer Attentiveness" (2007-01), in December 2007, to gather information on licensees' programs to determine the need for further regulatory action. After reviewing all the licensee responses to the Security Bulletin, the staff identified the need to request additional information. In July 2008, the staff issued a Request for Additional Information to all licensees. All licensee responses have been received, reviewed, and assessed. The staff plans on closing Security Bulletin 2007-01 by issuing closure letters to affected licensees in 2009.